

2015 National Green Building Standard™ (NGBS) Practices Specific to Windows and Door Products

Resource Efficiency

Window and door products may be eligible for up to 14 NGBS points from the Resource Efficiency chapter.

Practice	Description	Points Available
601.7	Prefinished building materials	2-5 <i>Point award dependent on percent of installed building material or assembly that is prefinished.</i>
604.1	Recycled content building materials	1-6 <i>Point award dependent on the material percentage that is recycled content.</i>
606.1	Biobased products (e.g., certified solid wood, engineered wood)	3

Energy Efficiency

Window and door products can contribute toward homes and multifamily buildings meeting air leakage and UA requirements in the Energy Efficiency chapter.

Practice	Description	Points Available
701.4.3.4	Fenestration air leakage: Windows, skylights and sliding glass doors have an air infiltration rate of no more than 0.3 cfm per sf and swinging doors no more than 0.5 cfm per sf, when tested in accordance with NFRC 400 or AAMA/WDMA/CSA 101/1.5.2/A440.	Mandatory
703.2.1	UA Improvement: Fenestration and/or skylights contribute toward total building thermal envelope UA that is less than or equal to that specified in Table 703.2.1(a).	0-23 <i>Point award dependent on UA improvement and climate zone.</i>
703.2.5.1	Fenestration: NRFC-certified U-Factor and SHGC do not exceed specified values of Table 703.2.5.1.	Mandatory practice
703.2.5.2	Enhanced Fenestration Specifications (aka dynamic glazing): window, exterior door, skylights, and TDDs contribute toward satisfying SHGC requirements of Tables 703.2.5.2(a), 703.2.5.2(b), or 703.2.5.2(c).	1-6 <i>Point award dependent on U-Factor and SHGC, product type, and climate zone.</i>
705.2.2	TDD or skylights that meet Table 703.2.5.2(a) are installed in rooms without windows.	2

UA Improvement Criteria

Table 703.2.1(a)
Equivalent U-Factors^a

Climate Zone	Fenestration U-Factor	Skylight U-Factor	Ceiling U-Factor	Frame Wall U-Factor	Mass Wall U-Factor ^b	Floor U-Factor	Basement Wall U-Factor	Crawlspac e Wall U-Factor ^c
1	0.50	0.75	0.035	0.084	0.197	0.064	0.360	0.477
2	0.40	0.65	0.030	0.084	0.165	0.064	0.360	0.477
3	0.35	0.55	0.030	0.060	0.098	0.047	0.091 ^c	0.136
4 except Marine	0.35	0.55	0.026	0.060	0.098	0.047	0.059	0.065
5 and Marine 4	0.32	0.55	0.026	0.060	0.082	0.033	0.050	0.055
6	0.32	0.55	0.026	0.045	0.060	0.033	0.050	0.055
7 and 8	0.32	0.55	0.026	0.045	0.057	0.028	0.050	0.055

- a. Non-fenestration U-factors shall be obtained from measurement, calculation, or an approved source.
- b. Where more the half the insulation is on the interior, the mass wall U-factors is a maximum of 0.17 in Zone 1, 0.14 in Zone 2, 0.12 in Zone 3, 0.10 in Zone 4 except in Marine, and the same as the frame wall U-factor in Marine Zone 4 and Zones 5 through 8.
- c. Basement wall U-factor of 0.360 in warm-humid locations.

Table 703.2.5.1
Fenestration Specifications

Climate Zones	U-Factor	SHGC
	Windows and Exterior Doors (maximum certified ratings)	
1	0.50	0.25
2	0.40	0.25
3	0.35	0.25
4	0.35	0.40
5 to 8	0.32	Any
	Skylights and TDDs (maximum certified ratings)	
1	0.75	0.30
2	0.65	0.30
3	0.55	0.30
4	0.55	0.40
5 to 8	0.55	Any

Exception: For Sun-tempered designs meeting the requirements of Section 703.7.1, the SHGC is permitted to be 0.40 or higher on south facing glass.

Enhanced Fenestration Criteria

Table 703.2.5.2(a) Enhanced Fenestration Specifications					
Climate Zones	U-Factor Windows & Exterior Doors	SHGC Windows & Exterior Doors	U-Factor Skylights & TDDs	SHGC Skylights & TDDs	POINTS
1	0.40	0.25	0.60	0.28	1
2	0.40	0.25	0.60	0.28	1
3	0.30	0.25	0.53	0.28	2
4	0.30	0.40	0.53	0.35	3
5	0.27 ^a	Any	0.50	Any	3
6	0.27 ^a	Any	0.50	Any	4
7	0.27 ^a	Any	0.50	Any	4
8	0.27 ^a	Any	0.50	Any	4

Exception: For Sun-tempered designs meeting the requirements of Section 703.7.1, the SHGC is permitted to be 0.40 or higher on south facing glass.
a. An equivalent energy performance is permitted based on fenestration meeting the requirements of Section B. Equivalent Energy Performance in ENERGY STAR Product Specification Residential Windows, Doors, and Skylights, Eligibility Criteria Version 6.0.

Table 703.2.5.2(b) Enhanced Fenestration Specifications					
Climate Zone	U-Factor Windows & Exterior Doors	SHGC Windows & Exterior Doors	U-Factor Skylights & TDDs	SHGC Skylights & TDDs	POINTS
1	0.38	0.25	0.55	0.28	2
2	0.38	0.25	0.53	0.28	3
3	0.30	0.25	0.50	0.28	4
4	0.28	0.40	0.50	0.35	4
5	0.25	Any	0.48	Any	4
6	0.25	Any	0.48	Any	5
7	0.25	Any	0.46	Any	5
8	0.25	Any	0.46	Any	4

Exception: For Sun-tempered designs meeting the requirements of Section 703.7.1, the SHGC is permitted to be 0.40 or higher on south facing glass.

Table 703.2.5.2(c) Enhanced Fenestration Specifications					
Climate Zones	U-Factor Windows & Exterior Doors	SHGC Windows & Exterior Doors	U-Factor Skylights & TDDs	SHGC Skylights & TDDs	POINTS
4	0.25	0.40	0.45	0.40	6
5-8	0.22	Any	0.42	Any	6

(Points for multifamily buildings four or more stories in height are awarded at 3 times the point value listed in Table 703.2.5.2(c))

2020 National Green Building Standard® (NGBS) Practices Specific to Windows and Door Products

Resource Efficiency

Window and door products may be eligible for up to 37 NGBS points from the Resource Efficiency chapter.

Practice	Description	Points Available
601.7	Prefinished building materials	2-5 <i>Point award dependent on percent of installed building material or assembly that is prefinished.</i>
604.1	Recycled content building materials	1-6 <i>Point award dependent on the material percentage that is recycled content.</i>
606.1	Biobased products (e.g., certified solid wood, engineered wood)	3
610.1	Life Cycle Assessment: A life cycle assessment (LCA) tool is used to select environmentally preferable products, assemblies, or entire building designs.	2-15 <i>Point award dependent on scope of assessment and number of impact measures evaluated.</i>
611	Product Declaration: product-specific or industry-wide environmental product declaration (EPD) is submitted for at least 10 products.	5
612.2(6)	Sustainable products: greater than or equal to 50% of the door leaves installed (by number of door leaves) is certified to UL 102 or equivalent.	3

Energy Efficiency

Window and door products can contribute toward homes and multifamily buildings meeting air leakage and UA requirements in the Energy Efficiency chapter.

Practice	Description	Points Available
701.4.3.4	Fenestration air leakage: Windows, skylights and sliding glass doors have an air infiltration rate of no more than 0.3 cfm per sf and swinging doors no more than 0.5 cfm per sf, when tested in accordance with NFRC 400 or AAMA/WDMA/CSA 101/1.S.2/A440. Exception: For Tropical Zones Only, Jalousie windows are permitted to be used as a conditioned space boundary and shall have an air infiltration rate of not more than 1.3 cfm per sq. ft.	Mandatory
701.6(5)	Alternative Gold level compliance for tropical zones: Glazing in conditioned spaces has a solar heat gain coefficient of less than or equal to 0.25,	Mandatory

	or has an overhang with a projection factor equal to or greater than 0.30.	
703.2.1	UA Improvement: Fenestration and/or skylights contribute toward total building thermal envelope UA that is less than or equal to that specified in Table 703.2.1(a).	0-23 <i>Point award dependent on UA improvement and climate zone.</i>
703.1.1.1	Maximum UA and SHGC: For ICC IECC residential buildings, the total building UA is less than or equal to the total maximum UA as computed by ICC IECC Section R402.1.5. The SHGC requirements for fenestration in Table R402.1.2 are also met. For ICC IECC commercial buildings, the total UA is less than or equal to the sum of the UA for ICC IECC Tables C402.1.4 and C402.4, including the U-factor times the area and C-factor or F-factor times the perimeter. The SHGC requirements for fenestration in Table C402.4 are also met. The total UA proposed and baseline calculations are documented. REScheck or COMcheck is deemed to provide UA calculation documentation.	Mandatory
703.1.1.2	Prescriptive R-values and fenestration requirements: The building thermal envelope is in accordance with the insulation and fenestration requirements of ICC IECC Table R402.1.2 or Table C402.1.3. The fenestration U-factors and SHGC's are in accordance with Table 703.2.5.1 or ICC IECC Table C402.4.	Mandatory
703.2.5.1	Fenestration: NRFC-certified U-Factor and SHGC do not exceed specified values of Table 703.2.5.1.	Mandatory
703.2.5.2	Enhanced Fenestration Specifications (aka dynamic glazing): window, exterior door, skylights, and TDDs contribute toward satisfying SHGC requirements of Tables 703.2.5.2(a), 703.2.5.2(b), or 703.2.5.2(c).	1-6 <i>Point award dependent on U-Factor and SHGC, product type, and climate zone.</i>
705.2.2	TDD or skylights that meet Table 703.2.5.2(a) are installed in rooms without windows.	2

UA Improvement Criteria

Table 703.2.1(a)
Equivalent U-Factors^a

Climate Zone	Fenestration U-Factor	Skylight U-Factor	Ceiling U-Factor	Frame Wall U-Factor	Mass Wall U-Factor ^b	Floor U-Factor	Basement Wall U-Factor	Crawlspac e Wall U-Factor ^c
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3	0.35	0.55	0.030	0.060	0.098	0.047	0.091 ^c	0.136
4 except Marine	0.35	0.55	0.026	0.060	0.098	0.047	0.059	0.065
5 and Marine 4	0.32	0.55	0.026	0.060	0.082	0.033	0.050	0.055
6	0.32	0.55	0.026	0.045	0.060	0.033	0.050	0.055
7 and 8	0.32	0.55	0.026	0.045	0.057	0.028	0.050	0.055

- a. Non-fenestration U-factors shall be obtained from measurement, calculation, or an approved source.
- b. Where more the half the insulation is on the interior, the mass wall U-factors is a maximum of 0.17 in Zone 1, 0.14 in Zone 2, 0.12 in Zone 3, 0.10 in Zone 4 except in Marine, and the same as the frame wall U-factor in Marine Zone 4 and Zones 5 through 8.
- c. Basement wall U-factor of 0.360 in warm-humid locations.

Table 703.2.5.1
Fenestration Specifications

Climate Zones	U-Factor	SHGC
	Windows and Exterior Doors (maximum certified ratings)	
1	0.50	0.25
2	0.40	0.25
3	0.35	0.25
4	0.35	0.40
5 to 8	0.32	Any
	Skylights and TDDs (maximum certified ratings)	
1	0.75	0.30
2	0.65	0.30
3	0.55	0.30
4	0.55	0.40
5 to 8	0.55	Any

Exception: For Sun-tempered designs meeting the requirements of Section 703.7.1, the SHGC is permitted to be 0.40 or higher on south facing glass.

Enhanced Fenestration Criteria

Table 703.2.5.2(a) Enhanced Fenestration Specifications					
Climate Zones	U-Factor Windows & Exterior Doors	SHGC Windows & Exterior Doors	U-Factor Skylights & TDDs	SHGC Skylights & TDDs	POINTS
1	0.40	0.25	0.60	0.28	1
2	0.40	0.25	0.60	0.28	1
3	0.30	0.25	0.53	0.28	2
4	0.30	0.40	0.53	0.35	3
5	0.27 ^a	Any	0.50	Any	3
6	0.27 ^a	Any	0.50	Any	4
7	0.27 ^a	Any	0.50	Any	4
8	0.27 ^a	Any	0.50	Any	4

Exception: For Sun-tempered designs meeting the requirements of Section 703.7.1, the SHGC is permitted to be 0.40 or higher on south facing glass.

a. An equivalent energy performance is permitted based on fenestration meeting the requirements of Section B. Equivalent Energy Performance in ENERGY STAR Product Specification Residential Windows, Doors, and Skylights, Eligibility Criteria Version 6.0.

Table 703.2.5.2(b) Enhanced Fenestration Specifications					
Climate Zone	U-Factor Windows & Exterior Doors	SHGC Windows & Exterior Doors	U-Factor Skylights & TDDs	SHGC Skylights & TDDs	POINTS
1	0.38	0.25	0.55	0.28	2
2	0.38	0.25	0.53	0.28	3
3	0.30	0.25	0.50	0.28	4
4	0.28	0.40	0.50	0.35	4
5	0.25	Any	0.48	Any	4
6	0.25	Any	0.48	Any	5
7	0.25	Any	0.46	Any	5
8	0.25	Any	0.46	Any	4

Exception: For Sun-tempered designs meeting the requirements of Section 703.7.1, the SHGC is permitted to be 0.40 or higher on south facing glass.

Table 703.2.5.2(c) Enhanced Fenestration Specifications					
Climate Zones	U-Factor Windows & Exterior Doors	SHGC Windows & Exterior Doors	U-Factor Skylights & TDDs	SHGC Skylights & TDDs	POINTS
4	0.25	0.40	0.45	0.40	6
5-8	0.22	Any	0.42	Any	6

(Points for multifamily buildings four or more stories in height are awarded at 3 times the point value listed in Table 703.2.5.2(c))

Commercial Spaces

Window and door products shall provide green requirements for the non-residential portion(s) of a mixed-use building.

Practice	Description	Points Available
13.105.2	Building thermal envelope fenestration: The non-residential portion of the building shall be in accordance with the requirements of the ICC IECC Section C402.4 as applicable	<i>Mandatory</i>